

# APPENDIX A

## BENCHMARK CHARACTERISTIC ANALYSIS OF DATA FROM FIXED STATIONS IN THE LOWER EAST FORK WHITE WATERSHED

Station: EW-79		Valid N	Mean	Confid	Confid	Median	Sum	Minimum	Maximum	Lower	Upper	Quantile	Quantile	Standard	Standard	Skid Err.	Skid Err.		
Alkalinity (mg/l)	80	171.7	161.6593	181.7007	166	13736	67	297	148	197	230	49	2019.529	44.93917	5.024352	0.282234	0.268809	0.557218	0.531786
Ammonia (mg/l as N)	80	0.1325	0.025184	0.238916	0.05	10.6	0.05	4.3	0.05	0.1	4.25	0.05	0.228234	0.477739	0.053113	8.623309	0.268909	75.91642	0.531786
BOD (mg/l)	38	1673864	1.183129	2.164239	1.3	63.6	0.5	6.5	0.5	2	6.1	1.5	2.227397	1.492447	0.242107	1.855263	0.382818	3.551836	0.71497
COD (mg/l)	80	14.85625	12.8972	16.8153	13.4	1188.5	2.5	76.6	11	17.75	74.1	6.75	77.49566	8.803162	0.984223	4.492238	0.268909	30.45528	0.531786
Cyanide (mg/l)	18	0.005111	0.004877	0.005346	0.005	0.092	0.005	0.007	0.005	0.005	0.002	0	2.22E-07	0.000471	0.000111	4.242641	0.536278	18	1.037795
Nitrate (mg/l as N)	80	1.940625	1.674377	2.206873	1.95	155.25	0.05	9.6	1.2	2.4	9.55	1.2	1.431398	1.166411	0.133763	3.359758	0.268909	20.47544	0.531786
Total Phosphorus (mg/l as P)	80	0.135313	0.052342	0.217383	0.08	10.825	0.015	3.17	0.06	0.115	3.35	0.055	0.135007	0.368792	0.041122	8.756077	0.268909	77.13141	0.531786
Total Solids (mg/l)	80	332.6375	313.4969	361.7781	318.5	26611	214	938	282	356	704	74	7397.702	86.0099	9.616199	4.202278	0.268909	6.414553	0.531786
Suspended Solids (mg/l)	80	32.65825	24.8523	291.7657	22.5	2566	2	165	155	13.5	163	26	803.5	28.34608	6.043404	4.173076	0.268909	30.37554	0.54146
Dissolved Solids (mg/l)	21	265.8095	241.6523	291.7657	257	5603	200	422	236	288	222	52	3006.062	54.82757	11.98438	1.306914	0.501195	2.062056	0.971941
Sulfate (mg/l as S)	22	37.5	24.93205	50.06795	31.5	825	16	160	28	36	144	8	803.5	28.34608	6.043404	4.173076	0.268909	30.37554	0.54146
TKN (mg/l as N)	80	0.78	0.57689	0.99311	0.6	62.4	0.2	4.00	0.5	0.8	7.8	0.3	0.833013	0.912685	0.102342	6.730769	0.268909	30.37554	0.531786
E. coli (CFU/100ml)	77	284.026	148.4338	419.6182	100	21870	5	4400	40	250	4395	210	3568618	597.3957	68.07356	4.973897	0.273908	50.37554	0.54146
TOC (mg/l)	21	3.019048	2.68632	3.351875	2.9	63.4	1.5	5.1	3.1	3.6	3.6	0.6	0.534619	0.731176	0.139555	0.720346	0.501195	2.881751	0.971941
Hardness (mg/l)	80	214.7125	203.0997	226.3253	215.5	17177	94	316	182.5	254	222	71.5	2723.094	52.18327	8.834267	-0.16708	0.268909	-0.45722	0.531786
Chloride (mg/l)	22	25.68162	12.46552	38.90712	18.5	565	10	155	14	75	145	12	889.7511	29.8287	6.359499	4.228659	0.490962	18.94201	0.95278
Dissolved Oxygen (mg/l)	62	10.1077	9.590157	10.62525	10.25	616.57	4.9	13.84	8.4	11.86	14	3.46	4.083581	2.020787	0.258735	-0.36098	0.303902	0.503605	0.596288
pH	61	7.900806	7.811499	7.990114	7.965	489.85	6.9	8.7	7.71	8.1	18	2	875523	935.6939	106.6322	1.839654	0.273908	4.195213	0.54146
Copper (ug/l)	77	2.963636	2.514437	3.412836	2	228.2	2	16	16	2	14	790	3.916818	1.979095	0.225539	4.1238	0.273908	24.25668	0.54146
Iron (ug/l)	77	1058.429	846.0521	1270.805	710	81499	89	5000	510	1300	4911	2	875523	935.6939	106.6322	1.839654	0.273908	4.195213	0.54146
Zinc (ug/l)	78	10.47821	8.60597	12.35044	10	817.3	2.25	50	5	10	47.75	5	68.95439	8.309878	0.940229	2.873874	0.272211	9.412449	0.538176

Station	EW-1	Valid N	Mean	Confid.	Confid.	Median	Sum	Minimum	Maximum	Lower	Upper	Quantile	Quantile	Range	Variance	Std.Dev.	Standard	Skewness	Std.Err.	Skurtosis	Std.Err.
Alkalinity (mg/l)	75	171.84	150.4266	183.2532	165	12888	53	359	139	207	305	68	2460.704	49.60548	5.727948	0.619128	0.2774	1.791755	0.548211	0.002793	0.000000
Ammonia (mg as N)	75	0.069333	0.057239	0.081427	0.05	5.2	0.05	0.3	0.3	0.05	0.25	0	0.02763	0.052565	0.00607	3.175937	0.2774	10.00939	0.548211	0.000000	0.000000
BOD (mg/l)	34	1.777941	1.238685	2.316997	1.6	60.45	0.05	6.3	0.5	0.5	2.3	1.8	2.288847	1.548492	0.264855	1.54545	0.403053	2.304411	0.787898	0.000000	0.000000
COD (mg/l)	75	15.184	13.63906	16.78984	13.3	1138.8	2.5	32.3	10.8	19	29.8	8.2	45.08893	6.714823	0.775382	0.821284	0.2774	0.29157	0.548211	0.000000	0.000000
Cyanide (mg/l)	75	0.005082	0.004967	0.005197	0.005	0.371	0.005	0.09	0.09	0.005	0.005	0	2.43E-07	0.000493	5.77E-05	0.741765	0.281029	57.38118	0.552222	0.2774	0.000000
Nitrate (mg/l as N)	75	1.901333	1.695015	2.107652	1.9	142.6	0.05	4.2	1.2	2.6	4.15	1.4	0.80412	0.866727	0.103545	0.993243	0.2774	-0.37275	0.548211	0.000000	0.000000
Total Phosphorus (mg as P)	75	0.108733	0.092188	0.125269	0.09	8.155	0.015	0.39	0.07	0.13	0.375	0.06	0.005165	0.071867	0.008299	1.928897	0.2774	4.670579	0.548211	0.000000	0.000000
Total Solids (mg/l)	36	362.1333	345.2638	379.0331	346	27160	217	556	311	407	339	96	5376.063	73.32164	8.466454	0.635326	0.2774	-0.00657	0.548211	0.000000	0.000000
Suspended Solids (mg/l)	75	52.8	38.85955	65.34105	46	3945	2	356	22	62	343	40	3066.595	55.37684	6.394387	3.575054	0.2774	16.09071	0.548211	0.000000	0.000000
Dissolved Solids (mg/l)	24	265.5455	239.4723	291.6186	253	5842	19	83	40.7	280	228	62	3456.165	58.80816	12.53752	1.359905	0.490962	18.17291	0.55278	0.000000	0.000000
Sulfate (mg/l as S)	24	41.20833	34.36778	48.0489	36.5	5842	202	430	22	82	354	42	262.433	16.19978	3.309787	0.994384	0.472261	0.655961	0.917777	0.000000	0.000000
TKN (mg/l as N)	71	413.5915	161.655	665.5281	0.6	14.35	0.05	1.5	0.45	0.75	1.45	0.3	0.077061	0.277598	0.026664	1.103523	0.472261	4.117873	0.917777	0.000000	0.000000
E. coli (CFU/100ml)	22	3.109991	2.793225	3.424957	3.05	16880	5	6100	20	210	6095	190	1132922	1064.388	126.3195	4.093177	0.284605	17.83663	0.562311	0.000000	0.000000
TOC (mg/l)	75	226.4	213.2147	239.5253	223	16880	112	352	192	269	240	77	0.507532	0.712413	0.151887	0.502308	0.490962	-0.52301	0.548211	0.000000	0.000000
Hardness (mg/l)	24	16.91667	14.65529	19.97833	17	574.79	408	9	34	12	19.5	25	3254.351	57.04692	6.587211	0.027054	0.2774	-0.42971	0.548211	0.000000	0.000000
Chloride (mg/l)	57	10.08404	9.645529	10.52254	9.94	454.1	5.7	13.7	9.09	11.17	8	2.08	39.73188	6.303323	1.286656	1.201944	0.472261	1.286553	0.917777	0.000000	0.000000
Dissolved Oxygen (mg/l)	58	8.001724	7.906607	8.098442	8.01	454.1	6.88	8.54	7.82	8.29	1.66	0.47	2.731239	1.652646	0.218898	-0.12386	0.316327	0.012029	0.623134	0.000000	0.000000
pH	25	2.884	2.260993	3.467007	2	71.6	2	6.88	2	4.1	4.5	2.1	2.136067	1.460345	0.292169	-1.26581	0.31372	1.882454	0.618136	0.000000	0.000000
Copper (ug/l)	24	1614.583	939.4286	2289.739	1350	38750	150	8100	735	1900	7840	1165	2556469	1598.896	326.3133	3.121801	0.472261	12.1002	0.917777	0.000000	0.000000
Iron (ug/l)	25	9.84	7.119255	12.56071	7.8	246	2.25	34	6.8	12	31.75	5.2	43.44396	6.591203	1.318241	2.259313	0.463684	6.852238	0.901721	0.000000	0.000000

Station	SLT-12	Valid N	Mean	Confid	Confid	Median	Sum	Minimum	Maximum	Lower	Upper	Range	Quantile	Standard	Sid Err.	Sid Err.
Alkalinity (mg/l)		78	114.7435	-95.000%	+95.000%	93.5	89.50	36	254	67	145	218	78	0.007662	0.008174	0.008942
Ammonia (mg/l as N)		78	0.069231	0.058877	0.081584	0.05	5.4	0.05	0.4	0.05	0.05	0.35	0	0.000302	0.005479	0.006204
BOD (mg/l)		38	1.182895	0.857949	1.50784	1	44.95	0.05	4.4	0.5	1.5	4.35	1	0.977335	0.988602	0.160372
COD (mg/l)		1	13				13	13	13							
Cyanide (mg/l)		1	0.005			0.9	0.005	0.005	0.005	0.5	1.6	3	1.1	0.645088	0.803174	0.080942
Nitrate (mg/l as N)		78	1.14359	0.962502	1.324677	0.07	89.2	0.2	3.2	0.5	0.1	0.545	0.05	0.007662	0.087531	0.008975
Total Phosphorus (mg/l as P)		77	0.096429	0.076561	0.116296	208	7.425	0.015	0.56	0.05	0.1	0.545	188	19857.49	140.3166	15.85436
Total Solids (mg/l)		79	250.2278	218.6643	281.7914	208	19768	110	977	148	336	867	27	6088.803	78.03078	8.779149
Suspended Solids (mg/l)		79	34.62025	17.14231	52.0982	13	2735	2	600	6	33	588	153	7882.765	18.78494	10.11778
Dissolved Solids (mg/l)		77	205.7013	185.5498	225.653	187	15639	98	399	125	278	301	14	166.2684	12.88451	1.450746
Sulfate (mg/l)		79	33.74684	30.85862	36.63505	32	2666	18	110	25	39	92	0.4	0.015533	0.123828	0.027021
TKN (mg/l as N)		21	0.366667	0.310301	0.423032	0.3	7.7	0.2	0.6	0.3	0.4	0.4	0.1	0.015533	0.123828	0.027021
E. coli (CFU/100ml)		74	655.9459	165.671	1146.221	70	48340	5	17000	10	350	16395	340	4478142	2116.162	245.9988
TOD (mg/l)		21	3.088095	2.6428	3.51339	3.2	64.85	0.25	4.6	2.8	3.8	4.35	1	0.956376	0.978252	0.213472
Chloride (mg/l)		79	152.3165	134.7523	169.8808	120	12033	54	382	96	196	328	100	6149.168	78.41653	8.82256
Hardness (mg/l)		22	9.318182	8.035333	12.60103	6	205	2.5	26	2.5	16	23.5	13.5	54.82251	7.404222	1.578586
Dissolved Oxygen (mg/l)		61	8.788689	8.169634	9.407743	9.1	536.11	4.01	14.1	6.97	10.42	10.09	3.45	5.842498	2.417128	0.308481
pH		62	7.730806	7.639667	7.821946	7.74	479.31	6.91	8.6	7.5	7.89	1.69	0.39	0.128798	0.358984	0.045578
Copper (ug/l)		21	2.5	1.836914	3.163086	2	52.5	2	8.2	2	2	6.2	0	2.122	1.456709	0.31788
Iron (ug/l)		21	628.0952	399.4733	856.7172	460	13190	120	1800	290	650	1680	360	252256.2	502.2911	109.6002
Zinc (ug/l)		21	6.314286	4.711734	7.916838	6.5	132.6	2.25	14	2.25	8.8	11.75	6.55	12.39454	3.520587	0.768255

Station	EW-94	Valid N	Mean	Confid	Confid	Median	Sum	Minimum	Maximum	Lower	Upper	Range	Quantile	Variance	Sid Dev.	Error	Skewness	Sid Err.	Kurtosis	Sid Err.
Alkalinity (mg/l)		75	190.5467	-95.000%	+95.000%	196	14291	73	274	165	229	201	64	1860.521	43.13376	4.980638	-0.5609	0.2774	-0.21335	0.548211
Ammonia (mg/l as N)		75	0.139333	0.023473	0.235194	0.05	9.7	0.05	4	0.05	0.05	3.95	0	0.211695	0.460104	0.053128	0.278207	0.2774	70.2938	0.548211
BOD (mg/l)		36	1.659444	1.13167	2.207219	1.1	60.1	0.5	6.2	0.5	2.15	5.7	1.65	2.526183	1.589397	0.264899	1.541389	0.392544	1.618314	0.768076
COD (mg/l)		75	14.55867	-22.76011	16.35723	13.5	1091.9	2.5	56.9	9.4	18	54.4	8.6	61.10759	7.817135	0.802645	2.439451	0.2774	10.9444	0.548211
Cyanide (mg/l)		2	2.5025	-29.2312	34.23625	2.5025	5.005	0.005	5			4.955	1.4	12.47501	3.531988	2.4875				
Nitrate (mg/l as N)		75	2.244	1.987872	2.500128	2.2	168.3	0.4	3.55	0.07	0.13	7.3	1.4	1.239254	1.113218	0.128543	1.531379	0.2774	6.409188	0.548211
Total Phosphorus (mg/l as P)		75	0.153	0.060015	0.245985	0.08	11.475	0.015	3.55	0.07	0.13	3.535	0.06	0.163334	0.404146	0.046667	8.247198	0.2774	70.03457	0.548211
Suspended Solids (mg/l)		74	366.027	345.2589	386.7952	363.5	27086	164	902	325	392	708	67	8035.534	89.64114	10.42057	3.077381	0.279197	17.78419	0.551684
Dissolved Solids (mg/l)		75	46.96	35.03182	56.88918	314.5	3447	2	272	17	56	270	39	2256.012	47.49749	5.484538	2.745703	0.2774	9.53281	0.548211
Sulfate (mg/l)		72	303.2083	289.769	316.6476	218.31	21831	93	417	266.5	349	324	82.5	3270.843	57.19129	6.740058	-0.89449	0.282898	1.487276	0.558831
TKN (mg/l as N)		75	41.84	35.55245	48.11755	38	3138	15	219	219	43	204	0.5	744.4335	27.28431	3.150521	5.364679	0.2774	31.27856	0.548211
E. coli (CFU/100ml)		71	4604.7183	167.4831	761.9535	0.8	21.2	0.3	6.1	0.5	1	5.8	0.5	1.387166	1.177789	0.251105	4.297302	0.490962	19.48257	0.95278
TOD (mg/l)		21	235.8667	223.0556	248.6777	23	32595	5	7500	20	220	7495	200	1576951	1255.767	149.0321	4.567936	0.284805	22.45746	0.562511
Hardness (mg/l)		75	464.7183	2.68061	4.700342	3	77.5	1.5	12.4	2.6	4.1	10.9	1.5	4.921905	2.218537	0.484124	3.260103	0.501195	12.67814	0.971941
Chloride (mg/l)		23	28.30435	16.87111	39.73758	249	17690	94	320	194	282	226	98	3100.387	55.68112	6.429502	-0.67327	0.2774	19.26035	0.548211
Dissolved Oxygen (mg/l)		61	9.863934	9.420863	10.30681	10.02	601.7	10	145	17	29	135	12	699.0395	26.43336	5.512987	4.231574	0.2774	19.26035	0.548211
pH		62	7.948871	7.857857	8.039895	7.885	402.83	6.79	8.8	7.76	8.12	7.31	0.43	2.976688	1.725308	0.220903	-0.29999	0.306627	-0.41152	0.603837
Copper (ug/l)		24	4.204167	2.155714	6.252619	2	100.9	2	25	2	5	23.4	3	0.128443	0.358389	0.045516	-0.75053	0.303302	1.378973	0.595288
Iron (ug/l)		23	1422.609	840.9732	2004.244	720	32720	120	4900	440	2500	4780	2060	1893111	1345.032	0.990233	3.721724	0.472261	15.71756	0.917777
Zinc (ug/l)		24	9.404167	5.913498	12.89484	7.75	225.7	2.25	40	3.575	12	37.75	8.425	68.33629	8.266576	1.687408	2.375673	0.472261	7.600592	0.917777